

Patent Claims

1. Arrangement for measuring of the geometry or structure of an object (38) by means of a coordinate measuring device (100) consisting of a light source, from which a lighting beam path originates impinging on a measuring point on the object, as well as an optical system for capturing and imaging a measuring point on at least one optical sensor (36), such as CCD sensor, whereby the optical system consists at least one movable lens group containing measuring lenses (14, 18, 22, 58, 60, 62, 64), and whereby at least some of the measuring lenses are each held by a seat (26, 28, 30, 68, 70, 72, 74), characterized in that in at least some of the seats (26, 28, 30, 68, 70, 72, 74) holding the measuring lenses (14, 18, 22, 58, 60, 62, 64) of at least one movable lens group, at least one additional lens (16, 20, 24, 76, 78, 80, 88) passed through by the lighting beam are arranged for imaging a light beam onto the object (38), whereby a first beam path originating from the measuring lenses runs on the object side in parallel to the on further beam path originating from the at least one additional lens.
2. Arrangement according to claim 1, characterized in that the first beam path (56) is an image processing beam path and/or the lighting beam path (34) is of a bright field epi-illuminator, or a laser distance sensor beam path.

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3. Arrangement according to claim 1 or 2, characterized in that the first and the lighting beam path (34) and the first beam path (32, 56), and possibly one further beam path passing through lenses arranged in the seats (26, 28, 30, 68, 70, 72, 74) meet on or on about one point of the object (38).

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4. Arrangement according to at least one of the preceding claims, characterized in that in each seat (26, 28, 30, 68, 70, 72, 74) of the measuring lenses (14, 18, 20, 58, 60, 62, 64) of the movable lens group, at least one additional lens (16, 20, 24, 76, 78, 80, 88) is arranged as imaging lens.

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5. Arrangement according to at least one of the preceding claims, characterized in that in front or behind movably arranged additional measuring lens (44) on the object side, a second beam path originating from the additional lenses (16, 20, 22) can be deflected into the optical axis of the measuring lenses (14, 18, 22).

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6. Arrangement according to claim 1 with an imaging lens system with zoom lens system comprising lenses (14, 18, 22) passed through by a beam path (32) arranged in seats (26, 28, 30), which can be adjusted in relation to each other for magnification and/or working distance change (38), whereby the beam path impinges on a measuring point of the to be examined object, characterized in that by each seat (26, 28, 30) lenses for two or several beam paths (32, 34) running in parallel to each other are held, and that the beam paths run in parallel to each other on the object side and impinge on the to be measured object (38) in the measuring point.

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15. 7. Arrangement according to claim 6, characterized in that the measuring lenses (14, 18, 22, 58, 60, 62, 64) passed through by the image processing beam path, and/or the additional lenses (16, 20, 24) passed through by the lighting beam path, and/or the lenses (76, 78, 80, 88) passed through by the laser distance beam path are optimized with respect to light passing through them.

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8. Arrangement according to claim 6, characterized in that the lenses are coated for achieving an optimization of the beams passing through them.

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